UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

BROADWATER ENERGY, LLC	***Docket Nos. CP06-54-000***
BROADWATER PIPELINE LLC	**CP06-55-000**
BROADWATER PIPLINE LLC	**CP06-56-000**

ANSWER OF THE
COUNTY OF SUFFOLK, NEW YORK
TO BROADWATER ENERGY, LLC AND BROADWATER
PIPELINE LLC'S MOTION FOR LEAVE TO REPLY

Pursuant to Rule 213 of the Federal Energy Regulatory Commission ("Commission" or "FERC"), 18 CFR § 385.213, the County of Suffolk, New York ("Suffolk County"), hereby submits this as its answer to the motion filed April 3, 2006, by Broadwater Energy, LLC and Broadwater Pipeline, LLC (collectively "Broadwater").[1] Broadwater's proposed project includes a Floating Liquefied Natural Gas ("LNG") storage unit ("FSRU") that lies within the territorial and jurisdictional limits of Suffolk County. Broadwater's motion for leave to reply contains an array of comments and protests to comments submitted to FERC pursuant to FERC's February 17, 2006 Notice of Applications. For the reasons stated herein, FERC must deny Broadwater's motion and order an evidentiary hearing once FERC determines the Application is complete.

Broadwater's filing, while styled as a "motion to reply," is more in the nature of a motion for summary judgment. By its motion, Broadwater seeks to stifle public scrutiny of its highly controversial proposal rather than subject it to a fair and full examination at an evidentiary hearing. Simply put, Broadwater's motion baldly states that all criticisms of its proposal are based on "parochial considerations"[2] of the proposed project's opponents which can be discarded

[1] Suffolk County intervened as a party in this proceeding.
[2] See Broadwater's motion at p.2-3.

and ignored by FERC even though these "parochial considerations" raise significant problems with the safety and security of the proposal. Remarkably, and defying credulity, Broadwater asserts in its motion that the mere fact that it has proposed the Broadwater Project is "the most compelling argument supporting the need for the Project."[3] Given that governmental agencies including the United States Coast Guard and FERC have continually chastised Broadwater in the *pre-filing and post-filing phases about significant deficiencies in Broadwater's Resource* Reports, the residents of Suffolk County have ample reason to question Broadwater's self-serving "compelling need" argument.

In essence, Broadwater wants us "locals" to trust Broadwater, and its parent corporations, Royal Dutch Shell and TransCanada Corporation, that they alone know what is best for Long Islanders and its precious Long Island Sound. However, the people of Suffolk County cannot accept on faith that two international corporations will appropriately consider the interests and concerns of local residents, especially when Broadwater seeks to impose its singular and error-filled point of view on Suffolk County residents and short-circuit the approval process. Suffolk County objects to Broadwater's tactics and respectfully requests that Broadwater's motion be denied, and that Broadwater's reply be stricken from the record.

The Record Before FERC Requires An Evidentiary Hearing

Broadwater asserts that it has presented a *prima facie* case for the licenses and approvals it seeks from FERC and that nothing that the interveners and commenters have submitted warrants an evidentiary hearing or even a technical conference. Again, Broadwater's plainly self-serving assertion ignores the fact that interveners and commenters raised a host of evidentiary and legal issues which cannot be decided on the paper record alone. It also cavalierly ignores the fact that Broadwater's voluminous application was only recently filed on

[3] See Broadwater's motion at p. 11.

January 30, 2006, publicly noticed on February 27, 2006[4] and that the date for timely motions to intervene and initial comments expired on March 10, 2006, just about one month ago.

Suffolk County acknowledges that FERC conducted a pre-filing process on this Application, but that pre-filing effort does not substitute for FERC's formal hearing process. Furthermore, the Application as filed by Broadwater is woefully incomplete. FERC stated in its Notice of Applications that Broadwater's Application as filed was incomplete and that it was deferring review and issuance of the Draft Environmental Impact Statement until further notice.[5] Also, the United States Coast Guard's review has been impeded by Broadwater's failure to provide essential information, and a Joint Application to the United States Army Corps of Engineers for §404 and § 10 permits, the New York State Department of Environmental Conservation ("NYSDEC") for a Water Quality Certificate, and New York State Office of General Services ("NYSOGS") for a submerged lands easement, scheduled to be filed by Broadwater during the week of February 27, 2006[6] was not filed until March 24, 2006. The NYSDOS Coastal Zone consistency application was only filed on April 13, 2006. Suffolk County has outstanding Freedom of Information Act ("FOIA") requests and appeals pending before FERC for access to publicly-withheld safety, engineering and environmental information. These issues along with Broadwater's admissions that it has yet to create and file its Emergency Response Plan,[7] has yet to address the interchangeability questions raised by Iroquois Pipeline and others,[8] and lacks a customer base for the LNG,[9] belie Broadwater's blithe claim that the

[4] 71 Fed Reg 9807-8 (February 27, 2006)
[5] Id.
[6] See attachment to LLG&M's February 15, 2006 letter to FERC Secretary Salas in Docket CP06-54.
[7] See Broadwater's motion at p. 19.
[8] See Broadwater's motion at p. 35.
[9] See Broadwater's motion at p. 11.

time is now ripe for FERC to grant Broadwater's Application and make it clear that Broadwater's claim is utter nonsense.

Suffolk County and other interested parties are entitled to a full hearing on Broadwater's Application, to cross-examine Broadwater with respect to the claims in its Application, claims which are in many aspects unfounded or in error, and to prepare and submit responsive evidence. In order to do so, Suffolk County and other interested parties must have the opportunity to review all of the documentation submitted by Broadwater with its Application, and to proceed in an open and public hearing with time for discovery and technical conferences as appropriate.

Safety and Security Concerns

Broadwater's claim that no hearing is necessary is based upon its assertion that widespread public fear and safety concerns about the proposed Project are mere hysteria, and that FERC should grant it summary judgment based on "the Commission's ordinary orderly processes." However, what those "ordinary processes" are not specified by Broadwater and in fact, run counter to FERC's established ordinary and orderly process, found in 18 CFR § 157.11, where evidentiary hearings are the rule, not the exception, as Broadwater will have us believe.

There is considerable public opposition to the proposed Project, opposition, in part, motivated by fear about legitimate safety concerns. However, that does not mean such fears are "hysterical" or unfounded. Safety is of paramount importance and cannot be ignored. In downplaying safety concerns and resisting a full and fair assessment of the safety issues in the sunlight of an evidentiary hearing, Broadwater expresses insensitivity to the public's main fears. That safety is of overarching concern to FERC in connection with LNG facilities is indisputable. For example, in the *Weaver's Cove LNG* proceeding, FERC stated the following. "The primary consideration before us is whether the proposed Weaver's Cove facilities can be constructed and

operated safely"[10] Thus, not only must FERC be assured that Broadwater can be constructed and operated in a safe manner but Suffolk County and its residents must also be assured that all safety issues associated with the proposed project are sufficiently identified and assessed during this proceeding. Broadwater also fails to address the problems raised by Suffolk County about first responders from local communities not having the training and equipment necessary to handle Broadwater-related emergencies. The fact that Broadwater intends to provide safety training to its on-board personnel fails to acknowledge that these on-board personnel may be disabled by the emergency and that local rescue and fire squads must respond to such emergencies. Because Broadwater has failed to establish that its facility can be constructed and operated safely, openly admits that the United States Coast Guard has yet to conclude that any aspect of the Broadwater proposal can be safely conducted,[11] and as noted above, has yet to even prepare an Emergency Response Plan, FERC is compelled to order an evidentiary hearing on the safety issues alone.

Congress did not hand FERC a blank check to authorize any and all LNG facilities by fiat, and Broadwater's attempt to shut down the debate about safety concerns in its early stages is unconscionable, particularly where it has provided inadequate or incorrect information about the project. For example, Broadwater asserts that the proposed location for its FSRU is in an isolated location far from population centers and outside of maritime transit corridors.[12] That assertion ignores the fact that millions of people reside along Long Island Sound on both the Long Island and Connecticut sides. It further ignores the fact that the Sound is used by tens of thousands of boats each year. There are 80,000 registered boats in Suffolk County, 180,000 registered boats in

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[10] Order Granting Authority Under Section 3 of the Natural Gas Act and Issuing Certificate in Weaver's Cove Energy, LLC et al Docket No. CP04-36-000 (Issued July 15, 2005), 112 FERC ¶ 61,070. at p 12 ¶ 32.
[11] See Broadwater's motion at p. 14.
[12] *See Broadwater's motion at pp. 15 and 17.*

Connecticut and boat registrations increase an average of 2-4% each year. Moreover, 700 foreign flag vessels, as well as 1,200 tugs and barges and 8 to 15 navy vessels use the Sound every year - hardly the blissful isolated maritime corridor that Broadwater would have FERC believe exists in Long Island Sound.[13] Furthermore, the FSRU's proposed location is smack in the middle of existing commercial maritime transportation corridors.[14] Thus, Broadwater's assertion that its proposal has no safety impacts because of its "isolated location" is refuted by factual arguments, and is not merely an emotional or visceral reaction of the project's opponents. As there are vigorous factual disputes about these safety concerns, FERC must order an evidentiary hearing and cannot approve it based upon the paper record.

In addition to safety concerns, Broadwater's proposal raises significant security concerns that cannot be properly evaluated by FERC without an evidentiary hearing. Suffolk County's prior comments about security issues mandate an evidentiary hearing. The County's comments are buttressed by a report, issued in February 2006, by the New York State Office of Homeland Security entitled "Focus Report: Maritime Terrorist Threat."[15] This report discusses safety and security concerns associated with facilities such as Broadwater's LNG proposal, among other maritime concerns. The report notes there are serious security issues raised by foreign-flagged vessels loading LNG in poorly secured overseas ports and the lack of appropriate vetting processes to ensure that employees on LNG tankers are properly trained about safety and emergency procedures. The report also notes that little information is known about multiple system failures occurring simultaneously on the FSRU and tankers and notes that the available

[13] See Broadwater LNG Facility Report by the Suffolk County Department of Fire, Rescue & Emergency Services, attached as Appendix A.

[14] Copies of existing commercial maritime shipping lanes in Long Island Sound taken from the United States Coast Guard Website are attached as Appendix B and demonstrate that the proposed project location is within those existing commercial shipping lanes. See also the last page of Appendix A.

[15] A copy of this report is attached as Appendix C.

data is limited to assessing each system separately. The report also discusses the catastrophic consequences of an LNG tanker accident closing the RACE in Long Island Sound, an issue that Broadwater sloughs off.[16] Not only would such an accident significantly impact and impair other commercial and residential users of Long Island Sound, who use the RACE to enter and exit the Sound, Broadwater has provided no analysis of the impact on such LNG supply disruptions on its own FSRU operations.[17] Broadwater's analysis also fails to consider the impact on national security if the RACE is blocked, which prevents United States Navy vessels from entering or exiting Long Island Sound.

Public Trust Doctrine

Broadwater needs an easement from the NYSOGS in connection with the footprint of the supports for the facility. Broadwater maintains that this footprint is a minor intrusion into the underwater land beneath the Long Island Sound which is public trust land. What it fails to discuss, once again, is the enormous size of the facility that is being supported by whatever footings are involved, the 25-mile long pipeline it intends to build as part of the project, and the fact that prior to dealing with any such grant, the NYSOGS, the NYSDEC, and the New York State Secretary of State, must consider the following factors: (1) Environmental impacts of the project; (2) Values for natural resource management, public recreation and commerce; (3) Size, character and effects of the project in relation to neighboring uses; (4) Potential for interference with navigation, public use of waterway, and riparian littoral rights; (5) Dependent nature of use; (6) Adverse economic impact on existing commercial enterprises; (7) Effect of the project on the natural resource interest of the state and the land, and consistency with the public interests for

[16] Whenever a critical issue is raised, Broadwater's tactic is to belittle it or call it "parochial" rather than address the issue head-on.

[17] See Appendix C at pp. 4, 9, 11 through 12. THE RACE issue is also discussed in Appendix A, wherein it is noted by Suffolk County FRES that the RACE is a narrow, difficult waterway, with wicked currents, and through which all vessels in and out of the Atlantic Ocean enter or exit Long Island Sound.

purposes of fishing, bathing and access to navigable waters, and the need of the owners of private property to safeguard their property; and (8) Consistency with the public interest for purposes of fishing, bathing and access to navigable waters and the need of the owners of private property to safeguard their property.[18] The Commissioner of the NYSDEC is also authorized to require an environmental assessment form and other environmental studies in connection with any such application.

The Broadwater Project will have catastrophic and negative effects on the use and safety of Long Island Sound. In particular, the surface of Long Island Sound will be impacted, in terms of the size and breadth of the proposed facility, the ability of the FSRU to pivot in various directions, the actual sterilization or reduction in useable area of Long Island Sound for a large area, and an additional prohibition of access to the Sound during the loading of the facility from a tanker, which according to the applicant, should take approximately 12-18 hours and occur every other day. In effect, Broadwater has chosen to locate the 800-pound gorilla in a critical area of Long Island Sound.

Under such circumstances, especially since the LNG to be unloaded at Broadwater's FSRU is not destined for use on Long Island, it is difficult to see how the lands conveyed, (i.e. the easements) promote the public interests or how they do not substantially impair the public interest and public trust use of the waters of the surface of Long Island Sound. These waters are unquestionably held in the public trust and come within the jurisdiction of Suffolk County under the Laws of 1881, Chapter 695, which in pertinent part provides "the jurisdiction of the legally constituted offices of Queens and Suffolk Counties and of their respective towns of said counties bordering on Long Island Sound is hereby extended over the waters of said Sound to the Connecticut State line." Thus, it is beyond dispute that the waters involved are within the

[18] See 9 NYCRR 270-3.2A.

jurisdiction of Suffolk County even though a feeble attempt is made by Broadwater in its motion to avoid that conclusion.

Further, the public trust doctrine is such that Long Island Sound, at the location in question, is used by thousands of persons as a park-like recreational area. This intrusion into that area constitutes a major violation of the public trust doctrine, especially since the area of Long Island Sound on the surface which is involved can certainly be characterized as parkland, and as such, held in public trust because of the tremendous recreational facilities that Long Island Sound in this area provides to private boaters, sail boating, fishing, scuba diving, snorkeling and other water sports. The area is tantamount to a park that is being used for recreational purposes.

It is essential to note that although in the Public Lands Law the legislature has authorized the Commissioner of the NYSOGS to grant certain easements in land under water, this does not authorize the Commissioner to intrude into the surface use of the water and into the public trust aspects thereof. It is this parkland aspect of Long Island Sound at this point that creates the public trust. In *Williams V. Gallatin*, 229 N.Y. 248 (1920), the Court of Appeals explained "a park is a pleasure ground set apart for recreation of the public to promote its health and enjoyment. (Citation omitted.) It need not and should not be a mere field or open space, but no objects, however worthy, such as court houses, school houses, which have not connection with park purposes, should be permitted to encroach upon it without legislative authority plainly conferred..."[19]

The intrusion of this permanently moored facility which is the first facility of this type to be located in any body of water of the world, as distinguished from on the shore, is in violation of this definition of parkland. In addition to the *Gallatin* and *Van Courtland* cases, a more recent

[19] *Van Courtland Park v. City of New York*, 95 N.Y.2d 623 (2001), quoting and reaffirming the aforesaid language from *Gallatin*.

case, *Landmark West v. The City of New York*, 9 Misc.3d 563 (Sup. Ct., N.Y. County, 2005) also recognized that the public trust doctrine includes waters as well as land used for recreational purposes. *See also, Johnson v. The Town of Brookhaven*, 230 A.D.2d 774 (2nd Dept.1996) (holding that "dedicated park areas in New York State are impressed with a public trust and their use for other than park purposes, either for a period of years or permanently, requires the direct and specific approval of the Legislature plainly confirmed.")

Moreover, New York State Navigation Law §§ 1 and 2(4) establishes Suffolk County's jurisdiction to protect the waters of Long Island Sound by exempting from the definition of "navigable waters of the state" all tidewaters bordering on and lying within the boundaries of Nassau and Suffolk Counties. Suffolk County has consistently maintained jurisdiction and regulation of all tidewaters bordering on and lying within its boundaries. In addition, the jurisdiction of Suffolk County over the surface of the water at this location is beyond doubt based on the Laws of 1881, Chapter 695 and the County has full jurisdiction of the surface of the water. Broadwater's assertion about the County's jurisdiction being abrogated by subsequent enactments of the State Legislature is simply wrong.

Critical Energy Infrastructure Information ("CEII")

Broadwater contends that lack of access to critical data, designated CEII, does not raise any pertinent issue in this proceeding. Rather, Broadwater attempts to hide behind FERC rulings in other matters while ignoring its own role in denying Suffolk County access to crucial data. Broadwater objected to Suffolk County's first FOIA request to FERC for information regarding not safety or security data, but about cultural resources information. Suffolk County sought cultural resource information included in Resource Report #4, and designated by Broadwater as CEII material, and thus, withheld from the public. As a result of Broadwater's refusal to consent

to disclosure of cultural resource information, FERC denied Suffolk County's FOIA request. Suffolk County has appealed that determination, which is still pending. If Broadwater refuses to allow cultural resource data to be evaluated by the municipal governmental authority in which the cultural resources supposedly are located, there can be no confidence, absent an evidentiary hearing, that Broadwater's other CEII data is adequately evaluated.

Suffolk County previously noted that FERC, by Orders 630 and 630-A, classified as CEII all of Resource Report 13 ("RR 13"), relating to engineering and design information on the FSRU, on the ground that public disclosure would endanger public safety, health and security.[20] Suffolk County reiterates that this fact alone demonstrates that the proposed project is inherently unsafe and should not be built. Moreover, as previously noted, the CEII designation of that document runs counter to the necessary State agency approval processes as New York State agencies are bound to publicly disclose facts on which they base their determinations. For example, a New York State Department of State ("NYSDOS") consistency determination necessarily needs to examine safety,[21] including the engineering and design safety information in RR 13, which needs to be disclosed under New York's Freedom of Information Law ("FOIL").[22]

Broadwater disagrees, saying that the CEII rules "achieve a balance between the public's "need to know" and the need to protect critical information.[23] Broadwater continues this argument by stating that the CEII rules prevent "needless" disclosure of information,[24] in effect, acting not just as the proponent of the project data, but also as its judge and jury. However, the point of an appropriate balance of these competing interests must be properly determined, but it

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[20] See Suffolk County's March 9, 2006 Comments at pp 3-7.
[21] The CMP for Long Island Sound says the LNG facilities must be safely designed and operated.
[22] Suffolk County has put NYSDOS and other State agencies on notice that it will seek copies of all documents submitted in Broadwater's anticipated request for state approvals.
[23] See Broadwater's motion at p. 43.
[24] See Broadwater's motion at p. 44.

should not be left to Broadwater, as the applicant, to determine that balancing point nor should that balancing be made by blanket policies that do not evaluate the actual data being withheld. FERC generically declared all of RR 13, to be CEII by rule, deciding in effect that all information in RR 13 is so critical that the public can never be shown it, even though a select few persons, for good cause shown, might be allowed a peek at it if they agree not to discuss it in public.

Remarkably, Broadwater contends that "[m]aterial deemed to be CEII, is, by definition, material that would be exempt from public disclosure under FOIA," citing FERC's CEII rule at 18 CFR § 388.113(c)(1)(iii),[25] and further claims that "without the CEII disclosure procedures, CEII might never be released by the Commission."[26] In other words, Broadwater, consistent with FERC's discussion in Order 630, [27] states that the CEII Rule only exempts from disclosure information that falls within an existing FOIA exemption.[28] FERC's Order 630, however, is broader than that and states that the CEII rule:

> "should not be mistaken for a determination as to whether any specific piece of information is accessible under the FOIA. A FOIA requester has the right to receive an individualized determination based on the document(s) requested. The Commission has not made, and cannot properly make, generic determinations as to whether FOIA exemptions apply." [29]

This points out the flaw in FERC's decision to make all of RR 13 CEII by rule. FERC has made a blanket generic determination that resource reports for LNG facilities were CEII,[30] which was later corrected to apply only to RR 13, engineering and design information.[31] The result was to flatly deny access to all engineering and design information on the FSRU, even if it

[25] See Broadwater Motion at pp 41-42.
[26] Id at p. 42.
[27] Order 630 at p13.
[28] See Broadwater's motion at p.42.
[29] Order 630 at p.13
[30] Id at p. 26.
[31] Order 630-A at pp. 12-13.

would be valuable to an intervener to fully evaluate the safety of the project. An individualized balance between "need to know" and "need to protect critical information" is precluded by this process because the decision to withhold the data is not based on the data itself, but simply because it is found within RR 13. Broadwater's assertion that a party seeking the CEII information can get access if FERC determines that party has a "need to know" the information, and is willing to sign a non-disclosure agreement, ignores the problem that the data remains unavailable to public scrutiny and cannot be analyzed as part of a public presentation, such as in this document.

The CEII rule as to RR 13 undermines public confidence in the process. CEII status may be justifiable where disclosure of a specific piece of information is shown to be sensitive in a specific case, but not where it is applied to all RR 13 engineering reports in all cases. The *Weinberger* case, cited by Broadwater,[32] is consistent with Suffolk County's position, and holds that military information classified by statute need not be disclosed because it is exempt under FOIA exemption 1. That is not the situation with respect to CEII as defined by FERC and *Weinberger is inapposite. Weinberger still requires a determination to be made in each case as* to whether the specific information can be released.[33] Simply put, Broadwater wants FERC and the public to "trust" it on all critical issues as it patronizes those who wish to obtain critical data for review. The truth cannot be found in non-disclosure.

FERC's CEII rule also runs afoul of State agency obligations under New York State statutes. Any New York State agency in possession of RR 13 under a non-disclosure agreement must nevertheless disclose it publicly under New York's FOIL Law[34] and the New York Open

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[32] *Weinberger v. Catholic Action of Hawaii*, 454 U.S. 139(1981).
[33] *Weinberger*, supra, at pp.204-205 (Concurring Opinion).
[34] NY Pub. Officer's Law, Art. 6, hereinafter FOIL.

Meetings Law.[35] Broadwater contends that FOIL provides a means of restricting RR 13 from public disclosure information based upon trade secrets, public safety, and "critical infrastructure" exemptions. The trade secret restriction[36] is not relevant to this discussion as RR -13 is not being withheld on trade secret grounds. The public safety restriction in FOIL may possibly be applicable but only if the Agency can show that the life or safety of any person would be endangered in the context of a specific request.[37] FERC's generic designation of RR-13 as a CEII document does not support a conclusion that its public disclosure would threaten life or safety within the meaning of FOIL § 87(f). Finally, despite Broadwater's inference, FOIL does not preclude disclosure of critical infrastructure information, even though a definition of "critical infrastructure" was added to FOIL in 2004.[38] That definition was added as part of legislation establishing the New York State Office of Homeland Security.[39] It precludes disclosure of certain reports made by that office but not information in the NYSDOS's possession in connection with a consistency determination.

Finally, Broadwater incorrectly contends that because New York's Open Meetings Law allows executive sessions for discussion of matters that would imperil public safety,[40] CEII data could properly be discussed at executive sessions. However, for this exception to apply, an individualized analysis would be required, and FERC's generic determination as to RR-13 is insufficient.

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[35] NY Pub. Officer's Law, Art 7, hereinafter Open Meetings Law.
[36] FOIL § 87(2)(d).
[37] FOIL § 87(f).
[38] See FOIL § 86(5), as added by the NY Anti-Terrorism Preparedness Act of 2004.
[39] Id.
[40] Open Meetings Law § 103(3), 105.

CONCLUSION

There is tremendous public fear and anxiety about Broadwater. The incomplete application and hiding of critical data properly create skepticism and doubt as to its safety, environmental impacts, and impairment of Long Island Sound as a public resource and public trusts lands. Given this degree of public concern, FERC cannot rule on this application without a full and fair opportunity to evaluate all aspects of the proposal at an evidentiary hearing with cross-examination and the ability to present witnesses. Broadwater's attempt to evade that public scrutiny of its risky and questionable proposal must be rejected by FERC.

Dated: Uniondale, New York
April 18, 2006

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list in this proceeding in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure.

Dated at Uniondale, New York, this 18th day of April, 2006.

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APPENDIX A

SUFFOLK COUNTY
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Brad Maier,
DEPUTY COMMISSIONER

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CHIEF FIRE MARSHAL

Broadwater LNG Facility Report

Liquefied natural gas (LNG) has been transported by sea since 1959 in specially designed LNG carriers. These vessels have a remarkable safety record and provide an essential link in the movement of LNG from production locations to consumer locations.

The combination of recent interest in expanding or building new facilities to receive LNG carriers along with increased awareness and concern about potential terrorist actions has caused Emergency agencies to raise questions about the potential consequences of incidents involving LNG carrier and off-loading operations. For example, the size and extent of a possible fire or the distance a vapor cloud may extend are important factors in gauging the acceptability of a new facility.

The Federal Energy Regulatory Commission (FERC) sponsored studies with the goal of identifying appropriate analysis methods for estimating flammable vapor and thermal radiation hazard distances for potential LNG vessel cargo release during transit and while at birth.

Several of these studies on releases or spills from LNG carriers employ varying methodologies and assumptions. As a result, these studies report some widely varying estimates of potential flammable vapor and thermal radiation hazard distances. None of the studies report spills on water where the liquid will form a pool of LNG and the effects of the water current, wave height and thermal affects of the water may have. *Thus, more data on flammable vapor plumes is needed for spills on water*

There are many theoretical and experimental gaps related to understanding the dynamics and subsequent hazards of an LNG spill on water. Filling some of the gaps is currently impossible due to experimental and computational limitations. Determining the spreading and vaporization of an LNG pool is instrumental in determining the evolution of the vapor cloud and subsequent related hazards. Wave action would increases the evaporation rate due to increase surface area and increased heat transfer rate from the lower levels of the water due to the mixing action of the waves. The effect of waves on spreading and vaporization should be investigated experimentally and if possible in a real life release. *Thus, more data on vapor plumes is needed for spills on water.*

Methane, an ingredient of LNG is considered a simply asphyxiant; but it has low toxicity to humans. In a large –scale LNG release, the cryogenically cooled liquid LNG would begin to vaporize upon its release due to the breach of an LNG Cargo tank. If this vaporizing cloud does not ignite, the potential exists that the LNG vapor concentrations in air might be high enough to present an asphyxiation hazard to the ship's crew, pilot boat crews, emergency response personnel, or others such as recreation boaters that might encounter an expanding LNG Vaporizing plume. It is questionable whether the spill sizes investigated to date give an indication of the atmospheric dispersion that would occur for very large spills. Determining the spreading and vaporization of the LNG pool is instrumental in determining the evolution of the vapor cloud and subsequent related hazards. If this part is performed incorrectly, the rest of the analysis is severely affected. No models were identified that account for the Multi-Hull structure of the vessel that Broadwater is proposing. *Thus, more data is needed for cargo releases of multi cargo vessels.*

There have been only a few LNG pool fires on water tests where measurements were taken. The pool fire tests on land indicate that the surface emissive power increases for pool diameters up to 35 meters. The tests could not prove that the Maximum emissive power was ever reached. It is difficult to determine whether the surface emissive power and the pool mass flux has leveled off for pool fires on water since only one test of a larger scale has been performed. *Thus, more data on LNG pool fires on water is needed.*

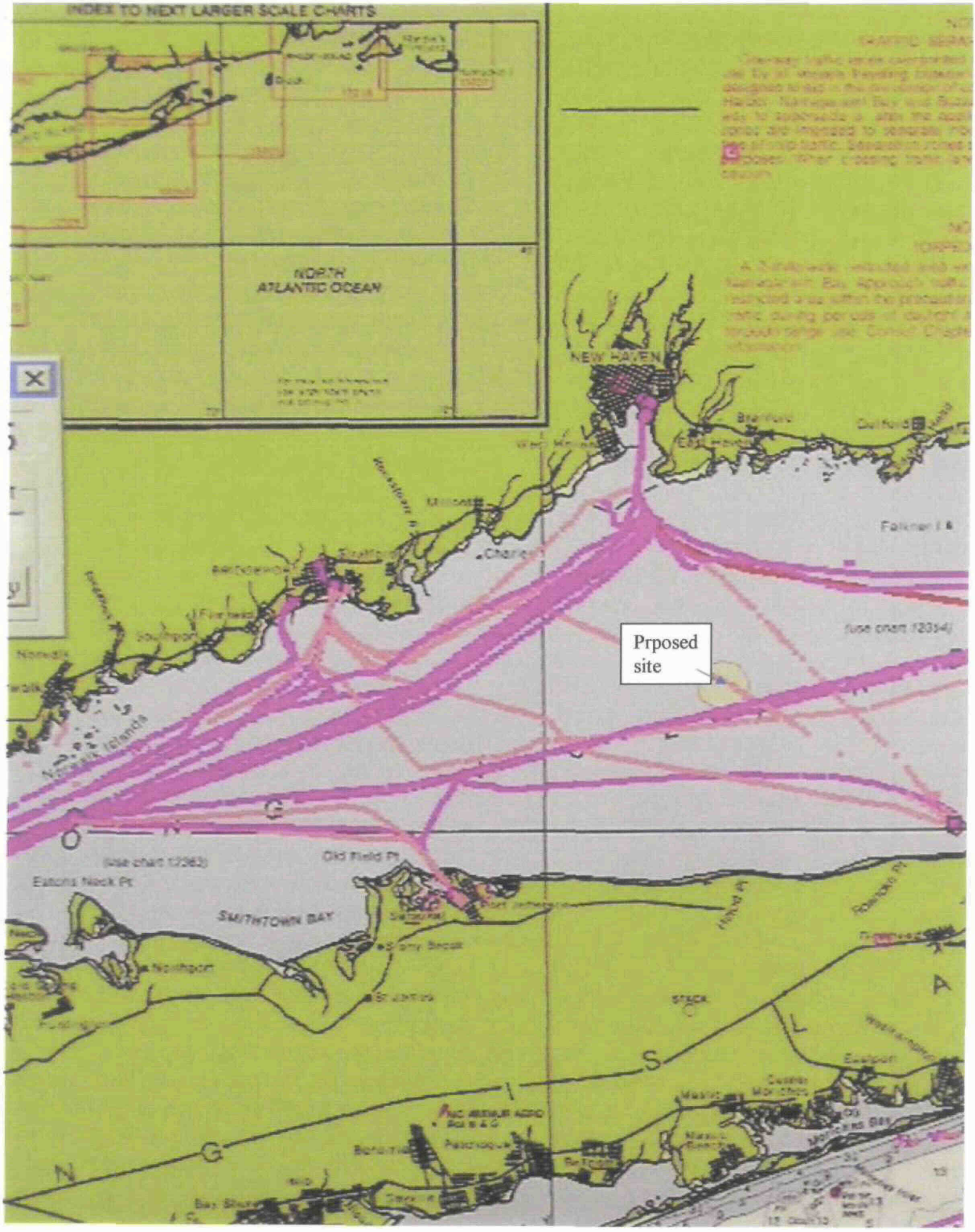
Risk identification and mitigation are and have been ongoing activities within the Long Island Sound area. Suffolk County has 80,000 registered boats. Connecticut has 180,000 boats registered. Every year it has an increase of 2-4% registrations. More wind and man-powered boats such as Kayaks are increasing. Jet skis also are increasing and are using the sound to avoid harbor speed restrictions. Besides recreational boats there are 700 foreign flag vessels that use the sound, 1200 tug and barges and 8-15 U.S. Navy vessels. Attached is a map of traffic flow and usage on the Long Island Sound. The purple lines represent the traffic routes and the thicker the line the more traffic of vessels.
The RACE (where the sound is narrow and where all the vessels enter from the Atlantic enter Long Island Sound) is a difficult waterway to maneuver vessels in and out of the sound. Broadwater will add 2-3 ships weekly

As a step toward standardizing methodology, a formal Ports and Waterways Safety Assessment (PAWSA) for Long Island Sound was conducted in Port Jefferson, New York in may of this year. The PAWSA process is a structured approach for obtaining expert judgments on the level of waterway risk. Thus the process is a joint effort involving waterway experts and the agencies responsible for implementing selected risk mitigation measures. Several items of concern were evident when the study was concluded. Some suggestions are as follows:

1.Establish cross Sound Harbor Safety Committee
2. Coordinate public evacuation plan
3. Coordinate emergency Preparedness plans
4. Create Firefighting plan/improve spill/ response coordination
5. Review adequacy of resources on both sides of
6. Update sensitive areas / mapping etc.
7. Create traffic lanes

8. Establish secondary channel through the RACE
9. Dredge the channels
10. Improve planning for fire, hazmat response
11. assess firefighting capability

In conclusion, a decision on the Broadwater proposal is immature at this time. Too many questions need to be answered. No models were identified that account for the multi-hull structure of an LNG carrier and the physics of a release of a cryogenic LNG. It is important to note that this methodology for estimating pool spread does not account for some aspects of spills on open water that could be important such as wind, water currents and wave height. However, no existing model for an LNG spill appropriately accounts for these effects. It should be recognized that the recommended models is based on the assumption of smooth quiescent water.
Several models such as Fay(2003), Lehr(2004), Quest(2003) and Webber give different findings of an LNG release. The Lehr model for instance does not present nor uses release rate models. It also does not use wave height, temperature of the water and water currents. The Quest model represents a 1meter – 5meter diameter hole but does not describe the method used to calculate the flow rate from the hole. It also does not take into account of wave height, water current and temperature. No model takes into account if Ice forms on the water because of the Cryogenic material of LNG, wave height, degree of spill confinement, heat transfer occurring at the surface and convective heat transfer cells formed below the surface of the spill. All these factors mentioned in this report have to be answered before a definitive decision can made on approving a first of its kind LNG facility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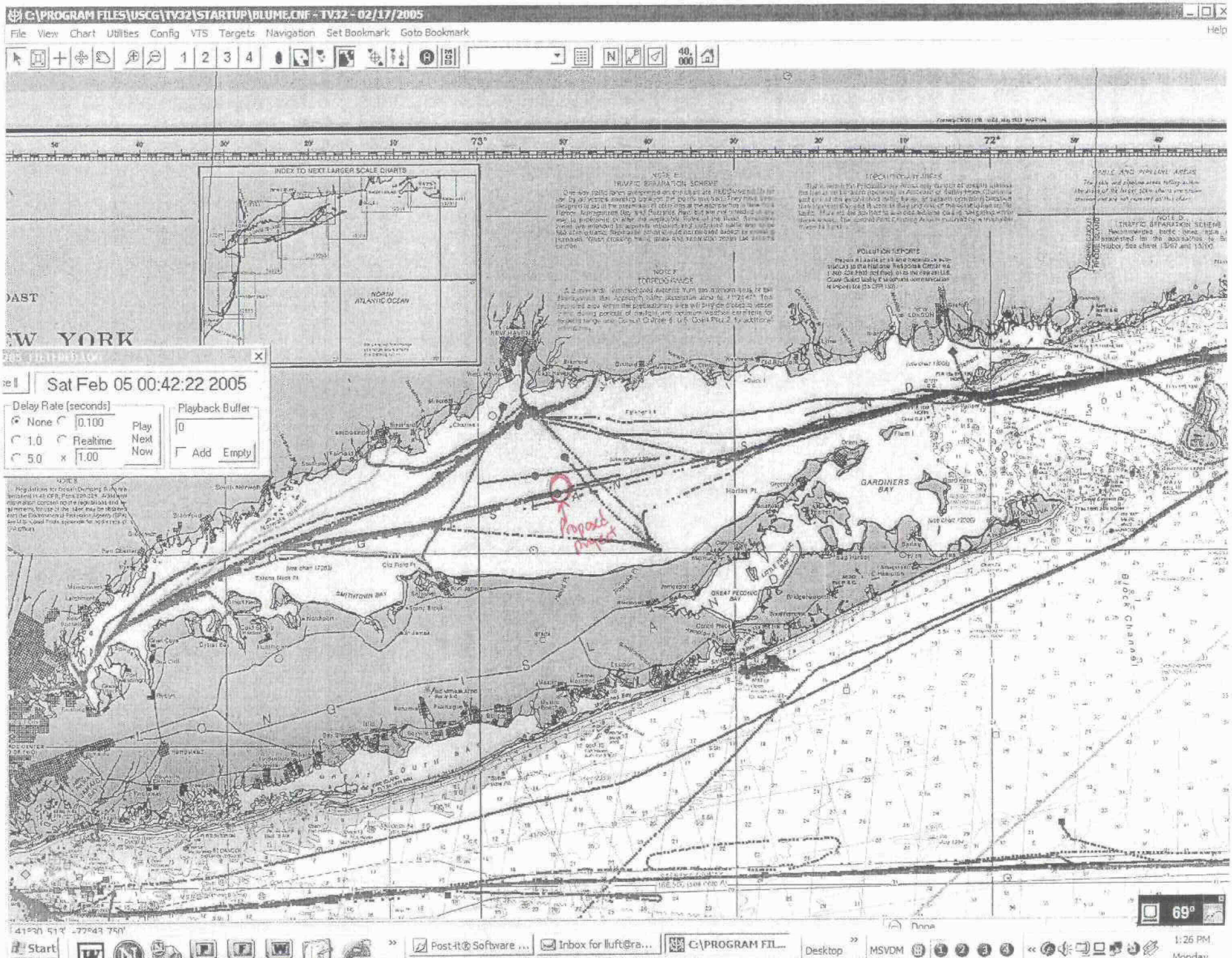
APPENDIX B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APPENDIX C

New York State Office of Homeland Security

Focus Report:

Maritime Terrorist Threat

February 21, 2006

Prepared by Senior Intelligence Analyst Christian Weber
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James McMahon
Director

"While commercial aviation remains a possible target... Opportunities to do harm are as great, or greater, in maritime transportation."
- The 9/11 Commission Report

Overview

American military forces have effectively denied Islamic terrorists access to inland safe havens from which to train and operate. The al Qaeda that existed prior to October 2001 with secure bases in Afghanistan no longer exists; it has been forced to transform into a new structure with different characteristics, tactics, communication patterns, travel methods, and sources of funding.[1]

As a result terrorists are seeking to exploit the largest area on the face of the earth, the sea, and has increasingly shifted their focus towards maritime operations. The maritime domain in particular presents not only a medium by which terrorists can move, but offers a broad array of potential targets that fit the terrorists' operational objectives of achieving mass casualties and inflicting catastrophic economic harm.[2]

The CIA warned as early as February 2003 that al Qaeda was developing and refining maritime attack capabilities.[3] Recent indications point to al Qaeda's intention to intensify operations against maritime targets and increase strikes against shipping and port facilities as part of a strategy to strike economic targets.

British Royal Navy Admiral Sir Alan West, the First Sea Lord and Chief of Naval Staff, has warned that we are entering "an era where the maritime terrorist threat is a clear and present danger.[4]

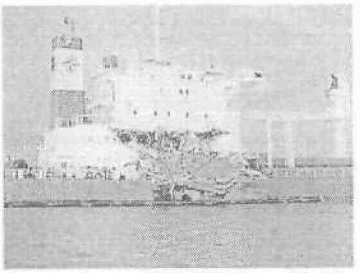
Suicide attacks against the *USS Cole* in October 2000 and the French-owned oil tanker *MV Limbourg* in November 2002 are the most notable manifestations of al Qaeda's oceangoing threat. However, there is evidence pointing to al Qaeda's growing focus on waterborne attacks.

In May 2002, a joint Moroccan-CIA operation captured a four man al Qaeda cell planning to attack U.S. and British ships in the Strait of Gibraltar using bomb-laden Zodiac speedboats. The operatives described to American intelligence officers their plan to acquire speedboats, load them with high explosives, and after a series of test runs, utilize the boats as "human torpedoes" against U.S. and British ships.

Furthermore, information gleaned as a result of the November 2002 capture of al Qaeda's nautical strategist, Abd al-Rahim al-Nashiri, confirmed that the Moroccan cell was just the crest of a planned wave of nautical terrorism. Nashiri, an expert in naval demolition and sabotage, detailed to interrogators al Qaeda's strategy for attacking Western maritime

[1] Bill Gertz, *Breakdown*, (Washington, DC: Regnery Publishing) 150.
[2] The National Strategy for Maritime Security, September 20, 2005
[3] Captain James Pelkofski, "Before the Storm: al Qaeda's Coming Maritime Campaign", Proceedings, December 2005.
[4] Sean Rayment, "Navy Chief Has 'Too Few Ships to Guard Sea Lanes from Terrorists", *Telegraph*, July, 9, 2003.

targets. The strategy called for ramming underway vessels with explosive-laden speedboats, detonating vessel-borne improvised explosive devices in ports, attacking large cargo ships and supertankers from the air with explosive-laden small aircraft, and subsurface attacks by divers or suicide demolition teams, utilizing limpet mines (a magnetic explosive device used for disabling and destroying surface vessels) and other improvised explosive devices.



Along with Nashiri, coalition forces seized an al Qaeda maritime military manual detailing where to strike different classes of vessels and the quantity of explosives needed to cause critical damage.

Saud Hamid al-Utaibi, a senior al Qaeda lieutenant, integral in the attacks on the *USS Cole* and *MV Limburg*, is believed to have replaced Nashiri as the new al Qaeda strategist. Al-Utaibi's promotion reinforces concerns by security agencies around the world that the maritime industry is a prime target for future al Qaeda attacks.[5]

On August 25, 2004, Stephen Flynn, the Jeane J. Kirkpatrick Senior Fellow for National Security Studies at the Council on Foreign Relations and a retired Coast Guard commander, in congressional testimony before the Committee on Transportation and Infrastructure, Subcommittee on Coast Guard and Maritime Transportation stated he had, "little doubt that al Qaeda possesses the means to identify those users of the maritime transportation system that US authorities currently view as low security risks and are fully capable of exploiting the many opportunities to intercept and compromise these legitimate shipments either at their point of origin or anywhere along the transportation route they travel."[6]

The very factors that allow maritime transport to contribute to economic prosperity also leave it uniquely vulnerable to terrorism. As Flynn characterized, the maritime industry is "the soft underbelly of globalization"[7]. Any number of major attack scenarios against the maritime transport system could result in massive casualties, cripple global trade and have immediate and significant economic impact[8].

Maritime Vulnerability

The security of our ports, sea lanes and maritime chokepoints is of vital importance to the United States. In today's interdependent global economic environment, with more than 95 percent of the world's commerce moved by sea, a catastrophic terrorist attack against the U.S. maritime industry would have a devastating impact on the global economy. Over 95 percent (by volume) of our non-North American foreign trade, including 100%

[5] http://www.ict.org.il/articles/articledet.cfm?articleid=532
[6] Brucy Moody, "Shipping Containers: Poor Man's Nuclear Missile?" Homeland Defense Journal, June 2005.
[7] CDR Michael Dobbs, "Homeland Security...From the Sea", *Journal of Homeland Security*, November 2002.
[8] John F. Fritelli, "Maritime Security: Overview of Issues", CRS Report to Congress, December 5, 2003.,

of key foreign commodities (i.e. foreign oil), enter the country through maritime channels.[9]

Terrorists may target a port that handles a large volume of oil and other goods and has a densely-populated area that tankers and freighters pass on their way through a harbor to an unloading terminal[10]. Various cities worldwide meet these criteria, including the Port of New York and New Jersey which spans over 2 states, 6 large port facilities and 4 smaller ones. It is the largest port of import in the United States and tenth largest in the world. It handles over 3 million containers in a year, including a broad range of liquid and dry chemicals and regularly handles more petroleum products than any other American port. It is the main and immigration gateway of the Eastern seaboard of North America.[11]

A vital component of U.S. maritime security is the ability to achieve sufficient awareness of all activities and elements in the maritime domain that could represent threats to the safety, security, or environment of the country. However, as the recently retired Pacific Fleet Commander, Admiral Walt Doran has warned, across the board our situational awareness is not very tight.[12]

The United States' maritime surveillance capability was primarily designed to monitor a few hundred large Soviet warships, not the 130,000 merchant vessels operating on the 21st century sea highways.[13] This situation is exacerbated by a veritable veil of secrecy provided ships operating under "flags of convenience".[14]

Despite the UN Convention on the Law of the Sea requiring a tangible link between a merchant vessel and the flag it operates under, several nations, most notably Liberia, Panama, and Tonga, maintain open registries. Countries with open registries allow foreign ships to register and operate under the registries country flag. The practice is largely undertaken to avoid taxes, labor laws, and insurance requirements normally imposed by their home countries. Terrorists are believed to exploit this loophole to mask the ownership and identity of their vessels. The lack of transparency in ship ownership is a significant concern since most ships calling U.S. ports are foreign owned and foreign crewed. In August 2001, the Tonga-flagged *Sara*, which had changed names four times in two years and flags twice during that span, was intercepted off the coast of Sicily with 15 al Qaeda operatives onboard all holding fraudulent Pakistani papers. According to the

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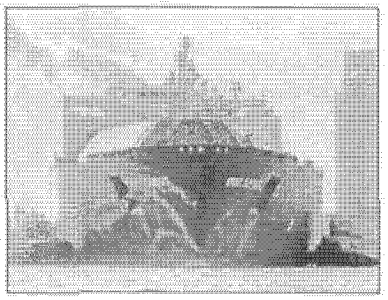
[9] James M. Loy and Robert Ross, "Global Trade: America's Achilles ' Heel", *Defense Horizons*, February 2002.
[10] Jonathan Medalia, "Port and Maritime Security: Potential for terrorist Nuclear Attack Using Oil Tankers", CRS Report to Congress, December 7, 2004.
[11] Harlan Ullman, "Securing the Port of New York and New Jersey: Network-Centric Operations Applied to the Campaign Against Terrorism", Stevens Institute, September 2004.
[12] David Brown, "Keeping Eye Out For Terrorists a Multinational Job", *Navy Times*, October 13, 2003. P21.
[13] Maki Becker, "Terror lurks on high seas", *New York Daily News*, September 21, 2003.
[14] Colin Robinson, "Al Qaeda's 'Navy' – How much of a threat?", *Center for Defense Information*, August 20, 2003

Sara's captain, the operatives boarded the ship at Nador, Morocco and were intended to be transferred to a second vessel during a rendezvous at sea.

To further exacerbate the problem, a large number of certificates held by seafarers have been found to be fraudulent. In this operating environment, there is considerable opportunity for terrorists to masquerade as crew ultimately taking over a ship and using it in a terrorist attack. Terrorists with fraudulent documents could also gain unauthorized access to ships and port facilities to place explosives. At least one captured al Qaeda operative is known to have been in the process of obtaining an international seaman's license that would allow him into any port in the world without a visa.[15] In February 2002, the cargo ship *Twillinger* was boarded at Trieste, Italy and found to have eight al Qaeda operatives onboard posing as Pakistani crewmen carrying false documents and large sums of money.

Terrorist Exploitation of the Sea



Terrorists' access to funding has been significantly hampered since the September 11th attacks. However, al Qaeda has proven resourceful at finding alternate methods to fund operations. In almost every instance, unfettered access to the sea is intrinsically linked to the terrorist organization's ability to raise capital.

In October 2003, Admiral Thomas Fargo, former head of US Pacific Command, pointed out that "although acts of terror can and do occur on the high seas, it is the maritime movement of terrorists and their use of vessels as weapons or weapons couriers that pose a significant maritime challenge."[16]

Al Qaeda has been known to raise money by arms smuggling and human slavery[17]. Moreover, coalition naval forces have interdicted over 125 al Qaeda operatives on *dhows*, traditional Middle Eastern working sailing boats, transporting weapons and drugs in Persian Gulf waters.

Intelligence officials have identified cargo freighters believed controlled by al Qaeda, and could be used by the terrorist network to ferry operatives, bombs, money, or commodities on the high seas.[18] These small container ships are believed to be al Qaeda's preferred method of globally transporting terrorists, weapons, and supplies. In November 1995, an al Qaeda-owned tramp freighter, *Seastar,* is believed to have delivered explosives for a car bomb attack in Saudi Arabia that killed five Americans. Similarly, it is believed that a freighter was utilized to deliver explosives to a Kenyan cell of al Qaeda that were used in the bombings of U.S. embassies in Kenya and Tanzania in August 1998.

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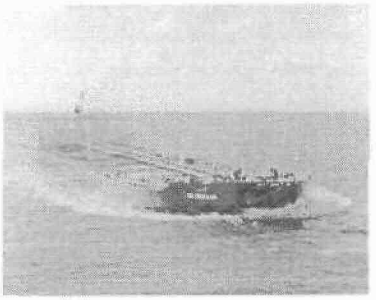
[15] http://www.ict.org.il/articles/articledet.cfm?articleid=532
[16] David Brown, "Keeping Eye Out for Terrorists a Multinational Job", *Navy Times,* October 13, 2003. P21.
[17] Fay Bowers and Peter Grier, "How Al Qaeda Might Strike the U.S. by Sea", *The Christian Science Monitor*, 5-14-03
[18] http://www.ict.org.il/articles/articledet.cfm?articleid=532

It is widely believed that Osama bin Laden has control of an estimated 20 merchant ships and crews.[19] A number of these ships are believed to be coastal vessels that operate in the area of the Red Sea or the Horn of Africa. According to the June 8, 2004 *Jane's Terrorism & Security Monitor*, the ships operate under Liberian or Panamanian flags of convenience and are frequently re-named, re-painted and re-registered. [20] Ostensibly, the vessels transport legitimate commercial goods. However, it is believed that they play a vital clandestine role in the movement of operatives, funds, messages, explosives, arms, ammunitions and other terrorist-related material to al Qaeda cells strategically situated on key shipping lanes.

Experts monitoring suspected "al Qaeda vessels" have tagged the ships as, among other nefarious purposes, part of a network for transporting heroine and hashish from the Middle East to the West.[21] Such a revelation is hardly shocking as there is evidence of a highly synergistic relationship between terrorists and drug lords. On March 13, 2002 Rand Beers, Assistant Secretary for International Narcotics and Law Enforcement Affairs provided testimony on this symbiotic relationship before the Senate Committee on the Judiciary Subcommittee on Technology, Terrorism, and Government Information.



Beers explained that, "drug traffickers benefit from the terrorists' military skills, weapons supply, and access to clandestine organizations. Terrorists gain a source of revenue and expertise in illicit transfer and laundering of proceeds from illicit transactions. Both groups bring corrupt officials whose services provide mutual benefits, such as greater access to fraudulent documents, including passports and customs papers. Traffickers and terrorists have similar logistical needs in terms of material and covert movement of goods, people, and money."[22]

Some notable incidents of terrorist attempts to exploit the sea include:

- **January 2002**: Israeli Naval forces captured the ship, *Karine A*, sailing in international waters on its way to the Suez Canal. In the hull of the ship, more than 100 Lau missiles were discovered, along with 20 rockets, dozens of mortar launchers of various range, hundreds of mortar bombs, dozens of mines, sniper rifles, machine guns and assault rifles, two rubber boats and two complete underwater diving apparatuses. The weapons had been supplied to Palestinian terrorists by Iran and Hezbollah and placed in special sealed containers.
- **May 2001:** Israeli Naval Commandos intercepted the *Santorini,* an Egyptian fishing boat, off Israel's coast carrying five metal boxes containing 122-mm. rocket fuses and bomb-making components, including a radio activation system and electronic delay units, land -to-air missiles, RPGs, mortar bombs, mines, guns and ammunition.

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[19] James Hessman, "Shipping Container Security and the Weakest Link Scenario", *Sea Power*, October 2003.
[20] Jonathan Howland, "Countering Marirtime terror, US Thwarts Attacks, Builds Up Foreign Navies", June 17, 2004
[21] James Russell and Iliano Bravo, "Homeland Defense: Ramping Up, but What's the Glide Path?", *Strategic Insight*, March 2002.
[22] http://usinfo.state.gov/topical/pol/terror/02031310.htm

Among the other items on board were 36 CD's with instructions for preparing bombs, including such information as where a bomber should stand on a commuter bus in order to inflict maximum casualties.

- **January 1995:** Abdelghani Meskini, an al Qaeda operative convicted for his alleged participation in the "Millennium plot" to bomb Los Angeles International Airport, is known to have illegally entered the United States onboard an Algerian LNG tanker. [23]

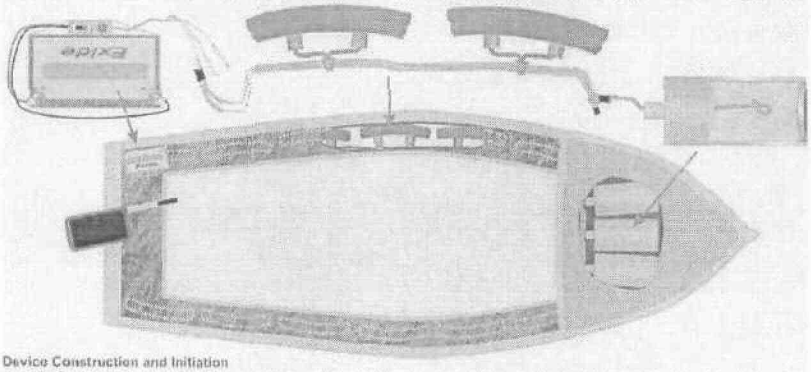
Sea Tigers: The Maritime Terrorism Trend Setter

The Sea Tigers are the highly skilled, organized, and equipped maritime component of the Liberation Tamil Tigers of Elam (LTTE), a group operating in northern Sri Lanka and designated as a terrorist organization by both the U.S. and the UK. Since their creation in July 1990 the Sea Tigers have emerged as the most technologically and tactically innovative of the world's maritime terrorist groups.[24]

As with terrorism on land, maritime terrorism tends to mimic successful tactics, thus the Sea Tigers modus operandi is likely to be emulated by other groups. Sea Tiger tactics that have proved successful or effective have been modified according to local circumstances and situations and repeated elsewhere.

During a December 2002 interview, Colonel Soosai, Commander of the Sea Tigers, told the BBC that al Qaeda had clearly copied terrorist tactics from the Sea Tigers. According to Soosai, the attack on the *USS Cole* in particular had all the hallmarks of Sea Tiger tactics adapted for al Qaeda purposes.[25] Such a development is not surprising considering the Sea Tigers perpetuate their expertise in a maritime school and academy, and formally package and publish a body of knowledge applicable to maritime terrorism.[26] Although not ideologically aligned with al Qaeda, LTTE shares the political and economic motivation to engage in maritime

A clinker built boat adapted to deliver approximately 100-150 pounds of high explosive. The configuration and nature of the charges suggest that the boat was intended to attack a hardened target (such as a patrol boat) while causing maximum collateral damage to the surrounding harbor.



Device Construction and Initiation

The device consists of three forward facing HE charges in steel cylinders placed into the forward compartment and twelve outward facing cast TNT claymore charges each fitted with two primers built into the polystyrene flotation, between outer and inner hulls.

The forward facing charges have a thick inwardly domed frontal plate which suggests that they are sophisticated Explosively Formed Projectile (EFP) devices.

A car battery powers the circuit. Initiation is by a simple press button via an additional arming switch. Multiple blasting caps connected to double up detonating cord lines joined by knots lead to the various explosive elements.

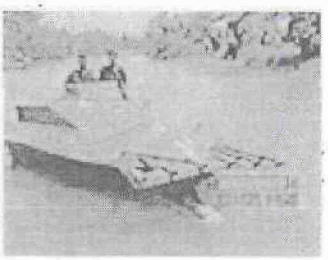
[23] Jonathan Howland, "Hazardous Seas", JINSA online, April 1, 2004
[24] Significant Events of Maritime Terrorism
[25] http://www.lankaweb.com/news/items02/131202-1.html
[26] Captain James Pelkofski, "Before the Storm: al Qaeda's Coming Maritime Campaign," Proceedings, December 2005.

terrorism, which impinges on its larger adversary's ability to achieve economic prosperity and security.[27]

Reportedly, terrorist operatives from the al Qaeda-linked Jemaah Islamiah group, responsible for the October 2002 and 2005 Bali bombings, have reportedly been trained in sea-borne guerilla tactics, such as suicide diving and ramming, developed by the Sea Tigers.[28]

The Sea Tigers own and operate ocean-going ships for legitimate commercial activities, and when needed they are utilized to facilitate acts of terrorism like hijacking, arms smuggling, drug trafficking and transporting operatives. They have utilized a "fleet" of freighters operating under "Pan-Ho-Lib" flags (Panama, Honduras, Liberia) to pioneer the modern terrorist version of "underway replenishment", the replenishment of ammunition, food, fuel, personnel, communications, spare parts, and terrorism-related materials to cells by off-loading the weapons and materials from the freighters at sea into smaller high speed boats. In the early 1990s, Osama bin Laden is believed to have tasked Wadih el Hage, later convicted as a conspirator in the 1998 US embassy bombings, with purchasing vessels and front companies to set up a similar system for al Qaeda.

The Sea Tigers' suicide bomber sub-unit, the Black Sea Tigers, pioneered a form of maritime suicide terrorism that uses attack craft loaded with large quantities of explosives and constructed of fiber glass hollowed out in a shoe shape to ensure they are fast, maneuverable and low profile. The unit's boats are equipped with a frame on the front of the boat bearing holding spikes that fasten the boat to the broadside of larger vessels upon impact. The Black Sea Tigers modus operandi is generally to attack under cover of darkness.[29]



In July 1990, a Black Sea Tiger suicide attack by explosive-laden fast boats badly damaged the Sri Lankan naval ship *Edithara* and a similar attack in May 1991 sank the Sri Lankan command ship *Abitha*. In October 2000, the Sea Tigers penetrated a high security zone around Sri Lanka's largest naval complex utilizing suicide go-fast boats, sinking a naval boat and damaging a number of others. The Black Sea Tigers also employed kamikaze-style suicide tactics with explosives-laden boats in September 2001 against the Sri Lankan navy, utilizing about 20 such boats.

Although predominately focused on strikes involving explosive-laden boats rammed into surface ships, the Black Sea Tigers have utilized innovative maritime technologies to attack targets in port such as mini 2-man suicide submarines, covert infiltration/ex-filtration of suicide divers, and one-man suicide torpedoes. The Black Sea Tigers have reportedly executed more than 40 seaborne suicide attacks.

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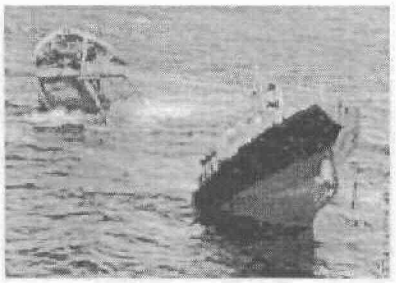
[27] Dr. Joshua Sinai, "Trends in Worldwide Maritime Terrorism", US Maritime Security Expo, 2005.
[28] http://www.ict.org.il/articles/articledet.cfm?articleid=532
[29] http://www.hindu.com/2004/07/28/stories/2004072802311000.htm

The Sea Tigers carried out USS Cole-style attacks as far back as 1990 and maritime terrorism experts believe that they are tactically at least 10 years ahead of al Qaeda. In this regard, examining the Sea Tigers model may provide a critical benchmark for general developments in the area of maritime terrorism and situational awareness of threats to maritime security.[30]

Maritime Terrorist Threat to US Ports

The maritime threat posed by al Qaeda, its affiliates, and sympathetic extremist groups is limited only by the imagination of terrorist planners. Ports are prime targets for al Qaeda because of their respective economic and "iconic" importance.



Ports are an essential intermodal link in the movement of international goods and are critical to the nation's economy and security. They are one of the most valuable and most vulnerable, low risk high payoff target for terrorists[31]. The nation's over 360 ports with more than 3,700 passenger and cargo terminals are a nexus for a large network of intermodal linkages including: 152,000 miles of rail, 460,000 miles of pipelines, 45,000 miles of interstate highways and more than 1000 harbor channels and 25,000 miles of inland, intracoastal and coastal waterways.

Attacks against port infrastructure are designed to disrupt, halt, or slow the operational efficiency of the port's capability to deliver vital goods. As far back as 1956, Egyptian forces successfully shut down the Suez Canal for over a year by sinking ships in the narrow waterway.[32] Were terrorist to scuttle a large bulk carrier or oil tanker in one of the US' major ports, the economic consequences would be equally as severe. Potential damage could include a spike in oil prices, an increase in the cost of shipping due to the need to use alternate routes, congestion in sea-lanes and ports, more expensive maritime insurance, and probable environmental disaster. If several such attacks occurred simultaneously in multiple locations worldwide the global economic impact would be devastating.

Merchant vessels are most vulnerable in coastal areas while anchored outside port facilities or traversing navigation channels and coastal waterways at slow speeds.[33] In this environment high civilian traffic and narrow sea lanes reduce the time afforded ships to detect, react and respond to sea-borne threats.

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[30] Peter Chalk, "LTTE Suicide Terrorism: Evolution, Tactics And Execution", WAPS International Conference, Oslo, Norway Aug 04
[31] Harlan Ullman, "Securing the Port of New York and New Jersey: Network-Centric Operations Applied to the Campaign Against Terrorism", Stevens Institute, September 2004.
[32] Jonathan Howland, "Hazardous Seas", JINSA online, April 1, 2004
[33] Ibid.

Seaports take on added significance in war time. Commercial ports provide the critical interface between the water and surface modes of transportation for handling both commercial and military cargoes. The Department of Defense (DOD) relies heavily on the use of US commercial ports to deploy its forces. Military cargo moves for US operations in Iraq and Afghanistan would not be possible without the nation's network of multiple ports with adjoining rail capabilities and intermodal infrastructure. The US Maritime Administration (MARAD) has designated 14 ports as "strategic commercial ports", including the Port of NY/NJ.

A large ship could ram and thus knock out bridge abutments and block shipping channels, or intentionally be sunk outside a key harbor blocking civilian and military vessels in port.[34] The lengthy closure of a military port could hamper the military's ability to re-supply deployed forces.[35]

Maritime Terrorist Threat to Passenger Vessels

Each year US ports transport 134 million passengers by ferry and host more than 5 million cruise ship passengers. While heightened safety measures in U.S. ports may afford passenger vessels some degree of protection from attack, they are still highly vulnerable.

In October 1985, terrorists from the Palestinian Liberation Front hijacked the passenger liner *Achille Lauro* off the coast of Egypt and murdered a US citizen, highlighting the potential terrorist threat to cruise ships.

Cruise ships are commonly viewed abroad as symbols of Western opulence and prosperity. They carry upwards of several thousand passengers and as Dave Brennan, an analyst with the Rand Corporation points out, cruise ships are "low-risk targets"[36]. As a targeting strategy, a successful attack on a cruise ship could produce high casualties; devastate that tourist industry and garner significant worldwide media attention for al Qaeda. Between 1992 and 1994 Ayman al Zawahiri and the Egyptian Islamic Group, now merged with al Qaeda, specifically targeted and attacked cruise ships along the Nile to damage Egypt's tourist trade.

In open waters, cruise ships can easily outrun a freighter and their compartmentalized design would make it extremely difficult for a small craft, such as the ones used to attack the *USS Cole* or *MV Limburg*, to deliver a blow that would severely endanger the ship.[37] However, even the fastest cruise ship could be at least temporarily disabled by a small craft suicide attack or sabotage from within, by either passengers or crew.

In August 2005, Lu'ai Sakra, a Syrian-born al Qaeda lieutenant, was arrested in the southern Turkish city of Antalya and charged with planning to attack Israeli cruise ships using explosive laden Zodiac speedboats. In total, 10 al Qaeda members, with 1,650 lbs.

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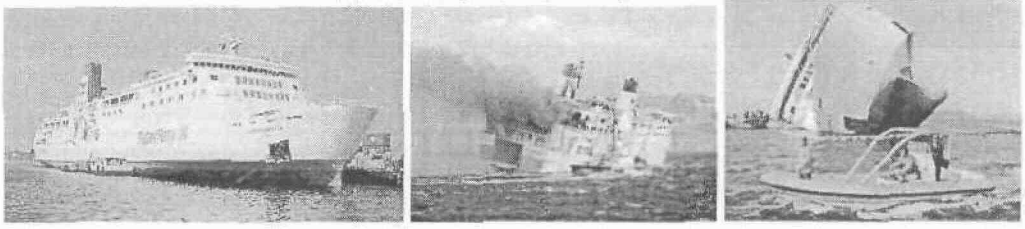
[34] Fay Bowers and Peter Grier, "How Al Qaeda Might Strike the U.S. by Sea", *The Christian Science Monitor*, 5-14-03
[35] Peter Goodspeed, "Piracy at Sea Reaches Record High", *National Post*, July 24, 2003.
[36] Tom Knowlton, "Signs of More Maritime Attacks", *DefenseWatch*, January 15, 2003.
[37] John Mintz, "15 Freighter Believed to be Linked to al Qaeda", *Washington Post*, December 31, 2002.

of C-4 explosives in their possession, were arrested in Turkey in connection with the plot, a further indicator of al Qaeda's ongoing interest in maritime terrorism.

Ferries have been long viewed by terrorists as a target capable of yielding high casualties. Most notably, on February 27, 2004, a television set filled with 8lbs of TNT was detonated onboard the Philippines' *Superferry 14* by Islamic terrorists killing 116.



In January 1996, nine pro-Chechen gunmen hijacked a Turkish ferry in the Black Sea and held 255 passengers and crew hostage for three days. The Turkish authorities allege the hijackers had earlier considered blowing up one of the two suspension bridges over the Bosphorus with explosives in order to block the Strait to traffic.

Maritime Terrorist Threat to Oil-Centric Targets

Security of oil and gas platforms and vessels in US ports has come under greater scrutiny since the October 2002 al Qaeda attack on the *MV Limburg* marked what many experts feel is the "beginning of maritime terrorism against the petroleum industry". However, On October 23, 2001, a year before the attack on the *Limburg,* five Black Sea Tiger suicide boats attacked a Sri Lankan bound oil tanker carrying over 450 metric tons of fuel, ramming the tanker, which later burst in flames.

After the *Limburg* attack Osama bin Laden's declaration that the attack targeted the "umbilical cord and lifeline of the crusader community" further fueled such concerns.[38] The US annually imports 3.3 billion barrels of oil and al Qaeda has expressed an ongoing interest in specifically attacking American dependence on foreign oil.

On April 24, 2004, three small boats laden with explosives attacked Iraq's Al-Basra Oil Terminal. The crew of one boat set off explosives as U.S. military personnel prepared to search it, killing three American sailors. The other two exploded near the Al-Basra Oil Terminal's installations, shutting down the terminal for two days with a loss of about 350,000 barrels of production worth $40 million in lost revenues.

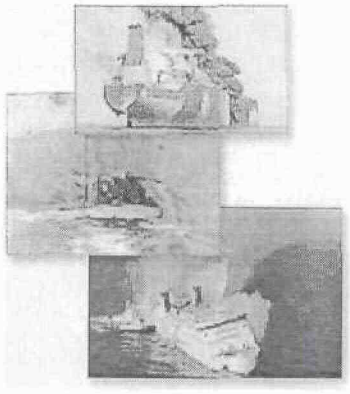
A 40-minute al Qaeda videotape made in September 2005 and released in December 2005, featuring senior al Qaeda deputy Ayman al Zawahiri specifically called for strikes against energy infrastructure in the Persian Gulf region. The region's oil wealth is viewed

[38] John Kerin, "Warning:Oil Rigs Terror Targets", October 15, 2003, http://www.news.com.au/common/story_page/0,4057,7565631%5E421,00.html accessed 10/15/2003

by al Qaeda as the "blessing of Allah upon Arabs and Muslims"[39]. Al Qaeda lieutenants, including Osama bin Laden, have made remarks about the need to halt the theft of Muslim oil numerous times in the past. However, it is believed that Al-Zawahiri is not issuing a warning to the oil industry or the West, but rather is giving targeting guidance to al Qaeda's operatives and sympathizers.[40]

Maritime Threat Scenarios: Tactics

The 21st century maritime threat is asymmetrical and multidimensional. Terrorists might hijack a vessel, register a ship in a 'flag of convenience' nation and use it for terrorist activities; or purchase and make use of a legitimate shipping company and its vessels to carry out acts of terrorism without coming under suspicion. These ships could be loaded with explosives and crashed into other vessels, port facilities, critical infrastructure, or population centers on the coast.[41] Maritime attacks may also involve the use of small underwater craft, such as small submarines or underwater motor-propelled sleds for divers. Some terrorist groups are known to have experimented with such methods.



"Trojan Horse"

Security experts have expressed concern over the potential for terrorists to use the international maritime container shipping system to smuggle terrorist weapons or even terrorist operatives into the United States.[42]

In March 2003, Two Palestinian terrorists wearing Israeli Army uniforms secreted behind a false wall in the rear of a 40-foot container loaded with marble and ceramic tiling infiltrated the Israeli Port of Ashdod. The terrorists emerged from the container and detonated explosive vests killing 10 port workers. Israeli security personnel had conducted an electronic scan of the container as well as a physical inspection of the interior and exterior and failed to detect the false wall. Ashdod has long been considered one of the most secure port facilities in the world because security guards inspect 100 percent of the cargo containers coming into the port.[43]

In October 2001, Italian authorities arrested an Egyptian al Qaeda operative, Rigk Amid Farid, stowed away aboard the German merchant vessel *Ipex Emperor*. Farid was ensconced in a container that had been outfitted with a bed, kitchen, cell phones, Canadian

[39] Fred Burton, "Al Qaeda: Targeting Guidance and Timing ", STRATFOR, December 9, 2005
[40] Ibid.
[41] http://www.ict.org.il/articles/articledet.cfm?articleid=532
[42] Commissioner Robert C. Bonner, Council on Foreign Relations, New York, New York, January 11, 2005
[43] Jonathan Howland, "U.S. Starting to Focus on Maritime/Seaborne Terror", JINSA online, April 16, 2004

passports, entry permits for security men and mechanics to New York JFK, Newark, and O'Hare airports, and three weeks worth of supplies. The container had been painted over to resemble the container that should have been placed aboard the vessel.

In May 2002, Senator Bob Graham (D-Fla.), chairman of the Senate Intelligence Committee, confirmed a classified Coast Guard intelligence alert that 25 suspected Islamic extremists were thought to have entered major seaports in California, Florida, and Georgia that year by hiding in cargo containers and walking away undetected, dressed as stevedores.

It is believed al Qaeda's director of global operations Khalid Sheikh Mohammed was involved in a plot to gain regular access to containers used to ship garments from Karachi to New York harbor before he was captured in Pakistan in March 2003.[44]

In the Weapons of Mass Destruction (WMD) spectrum, one noteworthy threat posed by maritime terrorists is a "Trojan horse" scenario, the smuggling into an American or Western port a weapon of mass destruction. A massive explosion within the confines of an American harbor would have devastating effects. Documents captured from one of bin Laden's top aides reveal plans for smuggling high-grade radioactive materials into the United States encased in shipping containers of sesame seeds.[45]

In a October 2003 interview with *Seapower* magazine, Senator Ernest Hollings (D-S.C.) described U.S. ports as the "most vulnerable component of the U.S. critical infrastructure", citing that "a single weapon of mass destruction, concealed in a container and smuggled into a major U.S. seaport, could cause untold damage to our economy, killing thousands of people and costing tens of billions of dollars in damage."[46] There additionally exists the potential for a synergistic effect if such an attack was to occur in a port such as Houston, where damage to nearby petrochemical plants could result in the release of toxic chemicals into the atmosphere.[47]

Analyst Note Experts assert that rather than attempt to smuggle a whole nuclear device into the country, al Qaeda is more likely to attempt to bring a device in piece by piece through several of the country's over 360 ports.[48]

Vessel-Borne Improvised Explosive Device

There is concern al Qaeda-linked terrorists will attempt to explode a ship laden with explosives or flammable material in a key port, canal or internal waterway, to cause maximum casualties, infrastructure damage and economic harm.

A study published in October 2003 by Aegis Defence Services, a London-based security consultancy, reported new and disturbing developments for maritime terrorism in Southeast Asia. In March 2003, the chemical tanker *Dewi Madrim* was boarded off the

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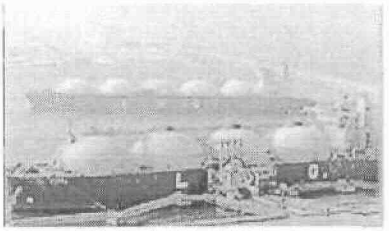
[44] Ntala Boodhoo, "Other Groups, with Al-Qaeda, Said to Threaten US," Reuters May 20, 2002
[45] Jonathan Howland, "Hazardous Seas", JINSA online, April 1, 2004
[46] James Hessman, "Shipping Container Security and the Weakest Link Scenario", *Sea Power*, October 2003.
[47] Fay Bowers and Peter Grier, "How Al Qaeda Might Strike the U.S. by Sea", *The Christian Science Monitor*, May 14, 2003.
[48] Bruce Moody, "Shipping Containers: Poor Man's Nuclear Missile?" Homeland Defense Journal, June 2005.

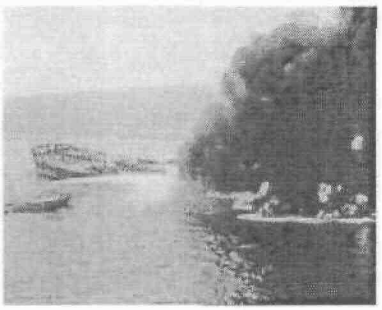
coast of Sumatra in Indonesian waters by 10 pirates from a speedboat armed with machine guns, machetes and carrying VHF (very high frequency) radios. They disabled the ship's radio, took the helm and steered the vessel, altering speed, for about an hour. Then they left, with some cash and the captain and first officer, who remain missing. The Aegis report concludes that this was a case of terrorists learning to drive a ship, and that the kidnapping (without any attempt to ransom the officers) was designed to acquire expertise for carrying out a maritime attack. The takeover of the *Dewi Madrim* has been described as 'the equivalent of the al Qaeda hijackers who perpetrated the Sept 11 attacks going to flying school in Florida'.[49]

Among the vessels that could be used by terrorists to create a massive vessel-borne improvised explosive device (VBIED) are large ships carrying liquefied petroleum gas (LPG) and liquefied natural gas (LNG), crude oil, toxic chemicals, and ammonium nitrate.



The main risk from LPG and LNG is during loading or unloading when the cargo can be released in a gaseous state. An ignited LNG vapor cloud would generate a extremely high heat output and cause extensive loss of life and damage to property. Moreover, released LNG would be more difficult to contain at sea than on land since it would disperse faster on the ocean. LNG also vaporizes more quickly on water because the ocean provides a relatively enormous heat source. For these reasons, most analysts conclude that the shipping, loading and off-loading LNG are significant terrorist targets.[50]

A considerable body of evidence suggests that liquefied petroleum gas (LPG) and liquefied natural gas (LNG) carriers, while potentially dangerous in the hands of terrorists, may be considerably more difficult to "weaponize" than other big ships that carry crude oil, especially fuel and other heavy oils, toxic chemicals, and ammonium nitrate.



Fuel tankers carry the approximate explosive force of a .8 megaton bomb and are easy marks for hijackers as they are lightly manned and generally equipped with only fire hoses for repelling hostile boarders The Piracy Reporting Centre of the International Maritime Bureau (IMB) reported that of the attacks in 2004, oil and gas tankers were the most popular targets with a total of 67 attacks. Theoretically, al Qaeda could hijack of an oil or gas tanker and attempt to explode it in mid-sea or in a major port. Even a strike from a smaller VBIED, while failing to cause a massive explosion could have devastating effects to a port, as the attack against the double hulled

[49] Michael Richardson, "Terror at Sea: The World's Lifelines are at Risk", *The Strait Times*, November 17, 2003.

[50] Michael Richardson, "A Time Bomb for Global Trade: Maritime-Related Terrorism in an Age of Weapons of Mass Destruction", Institute of Southeast Asian Studies, 2-24-04.

oil supertanker MV *Limburg* and the subsequent release of 90,000 barrels of burning crude oil into the Gulf of Aden clearly demonstrated.[51]

Moreover, barges loaded with Certain Dangerous Chemicals (CDC), including oxidizing materials, blasting agents, radioactive materials and gases capable of producing a highly toxic cloud such as Chlorine; routinely travel through US ports and waterways. If a CDC barge was struck by a VBIED or itself used as a weapon by terrorists, the incident could result in substantial loss of life, property, environmental damage, and grave economic consequences.

Particularly alarming is the fact that no less than ten tug boats have been hijacked and stolen in the waters of Southeast Asia. Tugs do not carry cargo and have few crew members compared to larger cargo ships. However, security experts are concerned that these tugs could be used to utilize to literally tow an explosive laden barge into a major port facility for an attack. [52] Terrorist manuals cite the value of authentic disguises and historical examples of commercial ships used as decoys to get close to targeted ships before attacking.[53] Early reports suggested the small boat that attacked the *Cole* gained access by operating among and possibly posing as one of the harbor workboats assisting with mooring and refueling preparation.[54] Hijacked harbor tug or workboat could cause enough uncertainty to delay a ship's force-protection response and allow a boat to approach close enough to detonate a potent payload.[55]

Along New York State's 524-mile long commercial canal system, which connects the Hudson River with the Great Lakes, Finger Lakes, and Lake Champlain, there are than 4 million registered small boats on the Great Lakes alone.[56] VBIEDs may also be fast inshore attack craft (powerboats, interceptors, rigid hull inflatable boats (RHIBs), jet skis, etc) equipped as suicide craft loaded with explosives.[57]

Speedboats are emerging as the terrorist weapon of choice, providing superior maneuverability and reduced radar detection, and capable of executing multiple attacks from several vectors, hiding in crowds such as fishing fleets, creating diversions, luring a target with distress calls or false emergencies, and conducting lethal assaults, initial or follow on, using various forms of arms.[58]Speedboats and recreational vehicles are also far more common and easy to acquire than an ocean-going vessel.

Although, small crafts have a very limited range, an al Qaeda merchant ship could carry and deploy small speedboats packed with explosives. The World War II German merchant raider *Michel* made extensive usage of motor launches to attack merchant vessels.[59]

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[51] Jonathan Howland, "Hazardous Seas", JINSA online, April 1, 2004
[52] Ibid.
[53] Military Studies, p. UK/BM-17-18.
[54] Roberto Suro and Alan Sipress, "Navy Revises Initial Account of Bombing," The Washington Post, October 21, 2000
[55] James Pelkofski, "Defeat al Qaeda on the Waterfront", Proceedings, June 2004.
[56] CDR Stephen Flynn, USCG, "Homeland Security is a Coast Guard Mission," Proceedings, October 2001.
[57] CAPT Michele Cosentino, "Defeating Terrorism from the Sea," Proceedings, December 2004.
[58] Captain James Pelkofski, "Before the Storm: al Qaeda's Coming Maritime Campaign", Proceedings, December 2005.
[59] Auxiliary Cruisers Raiding Tactics, http://www.geocities.com/pentagon/2833/general/tactics/raiding/raiding.html Accessed November 7, 2003.

More recently, officials are searching for a "mother ship" believed to be used to launch high-speed boats for several recent pirate attacks off Somalia. Fishermen in the area spotted a "pirate mother ship" drifting off the Somali coast in July 2005, on November 5, 2005, when pirates tried unsuccessfully to attack a 440-foot cruise liner operated by Seabourn Cruise Lines. Officials think the smaller boats used in the attack were launched from the mother ship.

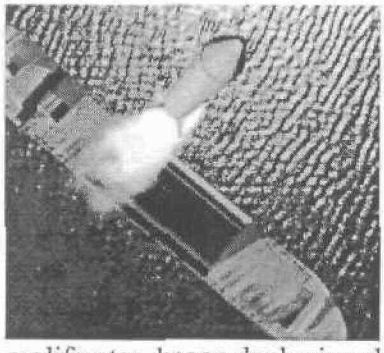
The high level of commercial and civilian sea traffic in the region hinders the detection and tracking of these small vessels, further truncating the response timeline.[60]

Stand Off Attack

Media reporting indicates that the Department of Defense is examining the potential for terrorists to launch an asymmetric attack with a missile from a freighter off the US coast.

Thousands of SCUD missiles and other inexpensive short-range ballistic missiles are spread worldwide, many in countries where terrorist organizations operate freely. A number of relatively short-range ballistic or cruise missiles, capable of being armed with chemical, biological or even nuclear warheads, could be launched from an innocuous-looking merchant ship off the 12,400 miles of U.S. coastline (including Alaska and the Great Lakes). Even the relatively large Seersucker, a Soviet-designed ant-ship cruise missile, can be hidden and launched from a standard 12-meter shipping container. Considering 75 percent of the nation's population and military bases are within 200 miles of the coast.

The ease with which these weapons are available was evidenced in December 2002, when federal agents discovered a SCUD missile and launcher inside a shipping container in the Port of San Pedro, Calif. A Silicon Valley-based arms collector had purchased the weapon on the open market.



In August 2004, Secretary of Defense Rumsfeld, at the seventh annual Space and Missile Defense Conference, cited the danger of terrorists or rogue states attacking the United States by putting a short-range SCUD-type missile on a freighter and firing it close to U.S. shores. Iran, a leading state sponsor of terrorism and weapon proliferator, began deploying short-range and medium-range Scud ballistic missiles aboard cargo vessels, and equipped them to be launched from ships using standard commercial radar and electronic equipment.[61]

It is believed that Iran has also experimented with ship-launched missiles as part of the development of an Electromagnetic Pulse (EMP) warhead capable of delivering a nuclear

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[60] Tom Knowlton, "Use Predators to Protect our Warships", *DefenseWatch*, January 22, 2003.
[61] http://missilethreat.com/news/200408180843.html

explosion high in the atmosphere and disrupting nearly every form of electrical system in the effected area. On March 8, 2005, Lowell Wood, a member of the Congressional EMP Commission, testified before the Senate Committee on the Judiciary's Subcommittee on Terrorism, Technology, and Homeland Security, testified that such an attack could be delivered against the United States by "a SCUD missile launched from a freighter off the Atlantic coast."[62]

Subsurface Threats

After the 9/11 attacks, the Safe Dive club in Eindhoven, Holland came under scrutiny after a diving instructor and some of his students were suspected of al Qaeda links. Wahid Gomri, a 35-year-old Tunisian dive instructor, arrived as a refugee to Holland and paid $8,000 for an accelerated diving certification course. Once certified, he rented expensive scuba diving suits, tanks and other gear on a regular basis at the Safe Dive club to teach his own summer classes for Arabic speakers at lakes around the Netherlands. In 2002, Gomri purchased a bulk order of about $7,000 worth of suits and equipment with funds that came to the school via a bank transfer from India. Gomri's students spoke little Dutch or English and came from Lebanon, Saudi Arabia, Afghanistan, and North Africa during the summer, studied with Gomri and then returned to North Africa or the Middle East.[63] Gomri has publicly acknowledged that three of the students he had trained at the Safe Dive Club in Eindhoven were later arrested for militant activities.

Since the June 2002 capture of al Qaeda's head of operations in Southeast Asia, Omar al-Faruq and his admission that he was reportedly planning SCUBA attacks against U.S. ships in the Indonesian port of Surabaya, counter-terrorism experts have become increasingly concerned al Qaeda may be training for unconventional underwater stealth attacks using SCUBA diving equipment, motorized underwater sleds, and human torpedoes. Al Qaeda divers could plant explosives on the hulls of ships, act as seagoing suicide bombers or sneak aboard vessels and commandeer them for attacks.

Specially trained and equipped terrorists can infiltrate straits, harbors, and bases near shore by swimming or scuba diving to damage vessels, facilities, and port resources with limpet mines, a time-fused contact mine attached to the target by magnets to disable and sink merchant ships moored at port.

Media reporting indicates that as far back as the late 1990s, a detachment of SEAL Team 6, in an undisclosed US-allied Arabic country captured several terrorists during an attempted attack on a US Navy amphibious ship. The captured terrorists were armed with AK-47s, but also yielded SCUBA diving gear, and improvised limpet-type explosive devices believed to be designed to punch an approximately three foot hole in a

[62] http://missilethreat.com/news/200504271305.html
[63] Sebastian Rotella, "Fears Persist of Al Qaeda Terrorist Link to PADI Dive Center," Cyber Diver News Network, http://www.cdnn.info/news/article/a030802.html

ships hull, fabricated from Yugoslavian clock detonators, and TNT shaped around a Semtex core.[64]

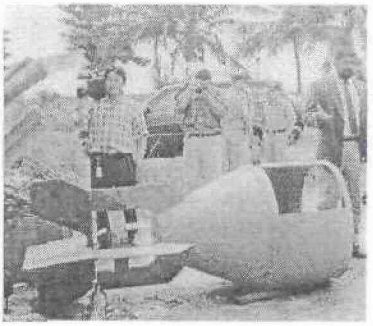
On at least two occasions during the summer of 2002, the Israeli Defense Force intercepted armed Palestinian SCUBA divers from the Gaza Strip attempting to infiltrate Israeli settlements to perpetrate terrorist attacks.

CIA Director George Tenet testified before the US Senate Committee on Intelligence in February 2003 that al Qaeda was developing new means of striking, including the use of "underwater methods to attack maritime targets."

According to an August 22, 2003 Department of Homeland Security Intelligence Bulletin, "Swimmer Attack Indicators and Protective Measures," maritime industry operators have reported a number of incidents involving suspicious activity including increased incidents of suspect terrorist individuals making inquiries into obtaining specialized equipment and training related to SCUBA diving and underwater operations.[65]

The October 2003 Aegis Defence Services study found evidence that suspected Southeast Asian terrorists have been learning to dive, and reportedly few of them were concerned about life-saving decompression techniques, a disturbing parallel to the 9/11 hijacker's indifference to landing and takeoff procedures in their flight instruction. The report cited an April 2000 incident involving the al Qaeda-linked Abu Sayyaf terrorist group in the southern Philippines, kidnapping a maintenance engineer fram a Sabah holiday resort. On his release, the engineer reported that his kidnappers knew he was a diving instructor and wanted instruction.[66]

In April 2004, media reports indicated U.S. intelligence agencies were reporting an increase in terrorist "chatter" regarding ships, port facilities, bridges, and SCUBA diving.[67]



Al Qaeda websites have indicated that maritime attacks could also involve the use of small underwater craft, such as mini-submarines or submerged diver delivery vessels (SDV).[68] While such tactics sound more like James Bond than reality, there have been a number of such vessels recovered in recent years. In April 2000, Thai Marine Police raided the shipyard of Seacraft Co. Ltd. and discovered a half built mini submarine capable of accommodating 2-3 persons. The Thai police also discovered sophisticated sonar and GPS systems, satellite phones, combat training videos in Tamil, LTTE calendars and uniforms. A similar submarine was seized by Sri Lankan Government Forces from the LTTE in the early 1990's.

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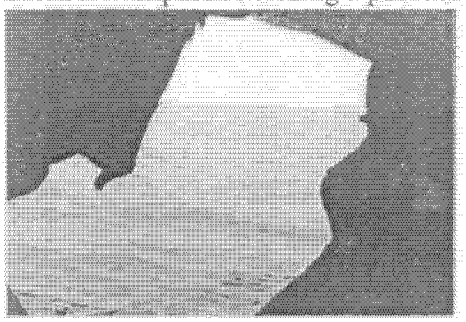
[64] http://www.blackwaterusa.com/btw2005/articles/082905port.html
[65] http://www.blackwaterusa.com/btw2005/articles/082905port.html
[66] Michael Richardson, "Terror at Sea: The World's Lifelines are at Risk," *The Strait Times*, November 17, 2003.
[67] Jonathan Howland, "Hazardous Seas", JINSA online, April 1, 2004
[68] http://www.defense-update.com/2005_12_01_defense-update_archive.html

Mines

In April 1988, the US Navy frigate USS *Samuel B. Roberts* was badly damaged by an Iranian mine in the Persian Gulf. The mine blew a 15-foot hole in the hull, flooded the engine room, and knocked the two gas turbines from their mounts.

During February 20, 2002 testimony before the House Armed Services Committee Subcommittee on Research and Development, Greg Smith, Chief Operating Officer of Swath Ocean Systems, warned that the threat of a mine being placed in U.S. harbors or ports or coastal waters was not only imaginable, but also very possible. He described the economic impact of closing a port due to terrorist mining or even just the threat of a mine while waiting for mine clearing assets to arrive as "tremendous".[69]



A mine is essentially an explosive charge in a casing that is laid underwater to destroy ships. Mines can be positioned on the seabed, moored at a predetermined case depth, or floated. They pose a significant threat in waters shallower than 300 feet.[70] Mines can be detonated by striking a ship, by the acoustic, magnetic, seismic, electric potential, or pressure influences (singularly or in combination) from a ship, or by remote when the target is within range. However, the terrorist objective is likely not so much the destruction of the ship as the political impact and economic damage caused by disruption to trade, increased shipping insurance rates and extended journey times.[71]

Mines are cheap (as little as $200), easy to acquire or to produce and achieve a dramatic surprise effect, making them an ideal terrorist weapon.[72] A number of countries are actively engaged in the development and manufacture of sea mines including Iran and North Korea, both state sponsors of terrorism and armed proliferators. Terrorists may also have access to a number of advanced Russian and Chinese mine variations and designs.

Conclusion

Preventing terrorists from utilizing the maritime superhighways to transport materials and from which to launch attacks poses a significant challenge in the war on terrorism. The maritime terrorist threat, while not new, appears to be growing more acute as militant jihadist groups became more adept at sharing information on seaborne attacks. Law Enforcement and homeland security authorities in states such as New York, with 127 miles of Atlantic Ocean coastline, 210 miles of northern border along the Great Lakes,

[69] February 20, 2002 Testimony before the House Armed Services Committee Subcommittee on Research and Development, Greg Smith, Chief Operating Officer of Swath Ocean Systems
[70] Joint Doctrine for Barriers, Obstacles, and Mine Warfare, Joint pub 3-15. III-13
[71] http://www.navweaps.com/index_tech/tech-068.htm
[72] CAPT Michele Cosentino, "Defeating Terrorism from the Sea", Proceedings, December 2004.

and the longest intrastate waterway system in the nation (800 miles), need to maintain heightened vigilance in light of this emerging trend.

Testing weapons and practicing advanced asymmetrical attack techniques, hallmarks of al Qaeda's typically meticulous preparation, takes time. Particularly if, as threat reporting seems to indicate, al Qaeda and its affiliates and sympathizers are developing the expertise to conduct a prolonged maritime campaign rather than a single spectacular maritime terrorism operation.

While driving small explosive-laden speedboats may be fairly rudimentary, operating at sea requires skills neither easily nor quickly acquired. It requires special training in navigation, coastal piloting, and ship handling to pilot a ship into a bridge, port facility, or other vessel, particularly a moving target.[73] Likewise, maneuvering through the dark waters and deafening engine noise of a busy port is difficult for experienced divers, let alone a comparative amateur strapped with heavy explosives.

Ultimately, the propensity of al Qaeda for patient and intricate preparation augurs a future sustained maritime terrorism campaign, rather than a continued irregular pattern of attacks.[74]

[73] Captain James Pelkofski, "Before the Storm: al Qaeda's Coming Maritime Campaign", Proceedings, Dec 2005.
[74] Captain James Pelkofski, "Before the Storm: al Qaeda's Coming Maritime Campaign", Proceedings, Dec 2005.

Potential Indicators and Warnings of Maritime Attacks

The following are suggested activities, though not fully inclusive, that may be of ***possible*** concern to law enforcement:

- Inquiries from individuals residing in foreign countries into boating and diving instruction and courses.
- Suspicious requests (e.g. wanting to know how to pilot vessels, but not dock them).
- Unusual requests for training as well as certain characteristics of training could represent potential terrorist interest in using diving to conduct terrorist activity. These indicators may include:
    - Requests for specific specialty training, including odd inquiries that are inconsistent with recreational diving.
    - Requests to learn advanced skills that can be associated with swimmer attack training, including training with rebreathers, deep diving, conducting "kick counts" or receiving navigation training.
    - Rapid progression of diver training and certifications, particularly if the training is routinely attended by the same students.
    - Training routinely conducted between the same two or three individuals.
    - Training sponsored by groups or agencies not normally associated with diving.
    - Training given by instructors who do not advertise and appear to have little means of visible support, especially those with a history of extremist views.
    - Training conducted in remote or atypical locations or restricted areas.
    - Threats, coercion or attempts to bribe trainers for certification.
- Suspicious attempts to purchase specialized marine equipment may provide indication of pre-operational activity. Including:
    - Individual purchases of common gear in excessive quantities.
    - Attempts to rent advanced gear without required certifications or attempts to rent gear that is inconsistent with the stated purpose of the diving report.
    - Volume purchasing inquiries related to Swimmer Delivery Vehicles (SDVs) and Diver Propulsion Vehicles (DPVs).
    - Exclusive purchases of darkened gear or after market painting.
    - Attempts to purchase large magnets, large diameter PVC pipe or empty compressed gas cylinders or theft of same.
    - Attempts to purchase advanced gear such as rebreathers or other equipment used in mixed gas diving by individuals who appear to lack expertise in the use of the equipment.
- People appearing to be engaged in surveillance of any kind in or around a port facility Particularly:
    - Under and around bridges, tunnels, or overpasses
    - Near commercial areas or services like ports, fuel docks, cruise ships, marinas.
    - Near industrial facilities, power plants and oil, chemical, or water intake facilities.

    - Near military bases and vessels, other government facilities, or security zones
    - In and around passenger terminals for ferries and day cruiser lines
    - Near railroad lines serving any of the above listed facilities
- Unattended vessels or vehicles in unusual locations.
- Lights flashing between boats.
- Unusual diving activity.
- Unusual number of people onboard.
- Unusual night operations.
- Recovering or tossing items into/onto the waterway or shoreline.
- Operating in or passing through an area that does not typically have such activity.
- Fishing/hunting in locations not typically used for those activities.
- Missing fencing or lighting near sensitive port-related locations.
- Anchoring in an area not typically used for anchorage.
- Transfer of people or things between ships or between ship and shore outside of port.
- Operating a vessel in an aggressive manner.
- Small planes flying over critical port locations.
- People attempting to buy or rent fishing or recreational vessels with cash for short-term, undefined use.

Submission Contents